

- I. Project Title: **Evaluation of Stocking Sub-adult Colorado pikeminnow via Translocation in the Upper Colorado River between Palisade and Rifle, Colorado**
  
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- III. Project Summary:

The overall goal of this project is to evaluate if translocated, wild and hatchery-reared sub-adult Colorado pikeminnow implanted with radiotags remain in the immediate vicinity of stocking, or move upstream or downstream of the stocking site in the Upper Colorado River from Rifle to Palisade, CO.

Nineteen sub-adult and Colorado pikeminnow were implanted with radio transmitters, translocated, and stocked in the Upper Colorado River at Rulison, CO, between 10 May and 18 June 2001. Followup telemetry of these radiotagged fish was conducted by boat intermittently in June, July, August, and September, and continuously by three stationary data loggers.

Nine different Colorado pikeminnow radiotagged in the spring of 2001 remain upstream from the Government Highline Diversion Dam. Five different radiotagged pikeminnow entered and used either the Government Highline Canal system (4) or the Grand Valley Irrigation Company canal (1). Three different radiotagged pikeminnow moved downstream into the 15-mile reach of the Colorado River. The whereabouts of two radiotagged pikeminnow stocked in 2001 are unknown. Radio signals from four of the five '91-year-class domestic-reared pikeminnow stocked in 2000 have been in the same location for nearly 12 months; it is suspected that these fish are dead. The radio signals from four wild pikeminnow and one other domestic-reared pikeminnow radiotagged in 2000 were not detected during 2001. Only one radio contact was made in March 2001 with one of the five wild pikeminnow that were radiotagged in 2000.

- IV. Study Schedule:
  - a. initial year: 2000
  - b. final year: 2002

- V. Relationship to RIPRAP:
  - A. Colorado River Action Plan: Mainstem, IV.A.1.b.(3) Monitor and evaluate results; make recommendations regarding further augmentation.
- VI. Accomplishment of FY 2001 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:
  - A. FY-2001 Tasks and Deliverables: Tasks 1-5.

Task 1. Capture, radiotag, and transport wild fish [pikeminnow] to stream reaches upstream of the Government Highline Diversion Dam; deploy fixed tracking stations.

Task completed.

Task 2. Monitor movements of radiotagged fish.

Task completed.

Task 3. Deploy and maintain water temperature data loggers.

Task completed.

Task 4. a) Prepare annual progress report; b) prepare draft and final report.

Task a) completed.

#### B. Findings (2001 Highlights)

##### General

Nineteen sub-adult and adult Colorado pikeminnow were each surgically implanted with a 29.0 gram, LOTEK® radio transmitter. Total length parameters of stocked pikeminnow were: mean (632 mm), range (529-741 mm). The wild fish were captured with trammel nets and boat electrofishing between 10 May and 18 June. Twelve pikeminnow were taken from the 18-mile reach and seven from the 15-mile reach of the Upper Colorado River. Pikeminnow were radiotagged on site and stocked the same day of implantation. All pikeminnow were stocked in the Upper Colorado River at the Rulison Bridge (RM 229.9).

Sixty '91-year class, sub-adult pikeminnow (TL: mean 398 mm; range: 363-451 mm) from Horsethief SWA were stocked in the Upper Colorado River near Parachute in June 2000. None of these 60 pikeminnow were seen or collected during five days of sampling in mid-July 2001 using electrofishing in the Upper Colorado River from Rifle (RM 241) to the Westwater boat landing (RM 127.6) in eastern Utah or during any other sampling by this station during 2001.

Water temperature data from four temperature recorders deployed in May 2000 in the Upper Colorado River were downloaded in May 2001. Two were deployed at RM 216.5 (Una Bridge) and two near RM 242.5 (upstream of the Rifle Bridge).

Two additional semi-permanent, land-based tracking stations were deployed during March 2001. One was deployed on the Colorado River (RM 187.2) between Price-Stubb and Grand Valley Diversion dams and the other was deployed on the Government Highline Canal west of Cameo, CO. The third land-based tracking station was installed in May 2000 on the Upper Colorado River at Island Acres State Park (RM 192.3) which is about 1.4 miles downstream from Government Highline Diversion Dam.

### Radiotracking

1. The spatial and temporal movements of the 10 radiotagged sub-adult Colorado pikeminnow released in 2000 and the nineteen released during 2001 were monitored by tracking fish from boats and from three semi-permanent, land-based tracking stations. Tracking by boat was conducted for 11 days during June (11th- 29th), 4 days during July (2nd-17th; 31st ), 7 days during August (7th-30th), and 3 days during September (12th-14th). No boat tracking was conducted in October or November. Boat searches were from the Rulison Bridge to Beavertail boat landing, Grand Valley Irrigation Diversion Dam downstream to Westwater boat landing in eastern Utah, and a 2.3-mile reach of the Lower Gunnison River between the Redlands Diversion Dam and the confluence with the Colorado River. The reach between Government Highline Dam and Grand Valley Diversion was “spot-searched” by vehicle from various turnout points and bridges where Interstate 70 and state highways paralleled the river. Tracking from vehicles was conducted in August along the Government Highline Canal immediately east of Palisade to the trash collecting grates at 17-3/4 Road. Vehicles were also used to search for radiotagged pikeminnow along the Orchard Mesa Irrigation District canal in the Vineland area east of Palisade.
2. The radio signals from two pikeminnow implanted with transmitters were located in the trash pile adjacent to the Government Highline Canal (about 17-3/4 Road) on 31 July 2001. Another radiotagged pikeminnow was located in the Government Highline Canal approximately 1/4-mile upstream of the trash collector at 17-3/4 Road on the same date. The actual radio transmitters from two of these pikeminnow were never found in the trash piles. Data from the land-based tracking stations indicated that these three pikeminnow had passed this site earlier, two in early-July and one in mid-July. One pikeminnow spent approximately 14 hours at this site, which indicated that the fish was likely alive when in the canal at this time.

The radio signal of a fourth pikeminnow was detected at the canal tracking station in late-June. The signal of this fish was never detected by mobile ground tracking in the Government Highline Canal downstream from the tracking station. Instead, this fish apparently took a different route than the other three pikeminnow. Immediately downstream from the tracking station on the canal, the water divides. About a third of the flow is diverted into an underground

siphon that travels under the railroad, Colorado River, and Interstate 70. This water then continues to the Orchard Mesa Irrigation Company's (OMID) pumping and power plant east of Palisade. Most of the water in the canal is run through the power plant and returns to the Colorado River immediately downstream from the Grand Valley Irrigation Dam at Palisade. Some of the canal water is pumped uphill for irrigation. Some water is released intermittently through a cement chute which empties into the Colorado River. It is at this location and in the plunge pool of this return that the radio signal of the fourth pikeminnow was detected on 28 August. Radio contact was never established with this fish during July or most of August in the Colorado River nor the plunge pool where the signal was detected in late-August. It is speculated that this pikeminnow had traveled through the siphon and into the OMID canal. It is further speculated that this fish resided in this canal system for about 60 days before the radio signal was located. The radio signal was detected in the same location in the plunge pool in mid-September. The apparent lack of movement from this signal leads us to suspect that this fish is dead.

All four of these pikeminnow had entered the canal upstream at the Government Highline Dam. The canal is presently unscreened and therefore, fish have free access to the canal.

During the period when these four pikeminnow entered the Government Highline Canal, approximately 70% of the flow volume of the Colorado River was being diverted into the canal (personal communication, Bob Norman, Bureau of Reclamation, Grand Junction).

3. This was not the first occasion that a Colorado pikeminnow has moved into the Government Highline Canal. During 2000, one wild pikeminnow radiotagged in 2000 was detected in the canal during mid-July. This pikeminnow apparently moved downstream about 29 miles from its stocking site and moved into the Government Highline Canal in mid-July. It then moved downstream about 1.4 miles in the canal, where it's signal was picked up by the data logger located at Island Acres State Park. According to telemetry records, the fish spent about three days immediately downstream of the siphon before returning back through the siphon, continuing back upstream in the canal, and returning to the Colorado River. It was contacted 20 July at RM 195, 1.3 miles upstream from Government Highline Diversion Dam. This same fish along with one of its wild counterparts, passed over the diversion dam and passed the Island Acres tracking station in mid-August. These two fish have not been contacted since.
4. The positions of the radio signals of four of the five domestic pikeminnow radiotagged in 2000 were in the same location during all of 2001. Each of these locations were the same as the last contact during 2000. The apparent lack of

movement from these signals leads us to suspect these four domestic-reared pikeminnow are dead.

The radio signals from four of the five wild pikeminnow and one other domestic-reared pikeminnow radiotagged in 2000 were not detected during 2001. The fifth radiotagged wild pikeminnow was last contacted immediately downstream of the Debeque Bridge (RM 207.5) on 12 March 2001. This pikeminnow was moving upstream when contacted on this date. Four of the five wild pikeminnow radiotagged and released upstream of Government Highline Diversion Dam in 2000 moved downstream over this dam within 4 months after being stocked.

5. During 2001, the average time (days) that radiotagged Colorado pikeminnow (n=9) spent upstream of the Government Highline Dam from the time following stocking to being detected by the land-based tracking stations at Island Acres (1.4 miles downstream of the dam) or on the Government Highline Canal ranged from 8 to 82 days (mean=29 days). The average time (days) that the four radiotagged Colorado pikeminnow spent upstream of the Government Highline Dam from the time they were stocked at the Rulison Bridge to the time they were detected at the canal tracking station was similar: range: 20-50 days, mean=31 days.
6. Fish movement downstream either over the Government Highline Canal or into the Government Highline Canal occurred between 25 May and 8 August. Nine of these fish moved downstream between 25 May and 11 July, the period which corresponded with spawning for this species.
7. The average total length of pikeminnow that moved downstream over the Government Highline Diversion Dam or into the Highline Canal was 627 mm (n=10; range of 529-741 mm) compared to an average length of 634 mm for pikeminnow that have remained upstream of the diversion dam to date (n= 9; range of 550-727 mm).
8. Summary: nine different radiotagged Colorado pikeminnow remain upstream from the Government Highline Diversion Dam. The locations of the radio signals from these fish as of 14 September ranged from RM 197.6 to 229.4. Two fish were downstream of the Debeque Bridge, seven fish were upstream of this bridge.

Three other pikeminnow were detected downstream from the Grand Valley Diversion Dam in the Upper Colorado River (15-mile reach) and one other radiotagged pikeminnow was located in the Grand Valley Irrigation Diversion canal about 200 yards from the entrance in early-August.

Four other pikeminnow entered and continued down canal in the Government Highline Canal. Three of these fish continued down canal in the Government Highline Canal to 17-3/4 Road and the fourth pikeminnow moved into the OMID canal system.

The whereabouts of two pikeminnow are unknown. One radiotagged pikeminnow was last contacted by the land-based tracking station between Price-Stubb and Grand Valley Diversion dams on 11 June. It is unknown if this fish entered the Grand Valley Irrigation Company canal or continued downstream in the 15-mile reach. Another radiotagged pikeminnow was last contacted at the canal tracking station on 11 August. It spent approximately 4 hours at this site. It is unknown whether this pikeminnow moved further down canal in the Government Highline Canal or moved into the OMID canal system.

VII. Recommendations:

- A. Continue to download movement data from the three land-based tracking stations. Track the movements of sub-adult Colorado pikeminnow radiotagged in 2001 during the fall and winter of 2001, and winter and spring of 2002 by boat.

VIII. Project Status:

- A. Movements of Colorado pikeminnow radiotagged in 2001 will continue to be collected and logged in FY2002 until the spring of 2002 with two of the land-based tracking stations in the Upper Colorado River and one in the Government Highline Canal and by boat.
- B. Download water temperature recorders as needed.
- C. Project is ongoing and is "on-track".
- D. The project will continue through FY2002; a final report is due in late-FY-2002 (August 2002).

IX. FY 2001 Budget

- A. Funds Provided: \$ 39,000
- B. Funds Expended: \$ 39,000
- C. Difference: \$ 0
- D. Status of Work--Percent of Work Completed (if BR-funded project): N/A.
- E. Publication Costs: \$ 0

X. Status of Data Submission:

Nineteen wild sub-adult and adult pikeminnow were radiotagged. All radiotagged fish that were translocated and stocked were PIT-tagged. The following data were collected and recorded from all fish prior to their being released: total length (mm),

weight (g), PIT-tag ID, and radio transmitter Code number. These data have been computerized and are provided to the UCRB database coordinator at his request.

XI. Signed: Bob D. Burdick                      2001/12/03  
Principal Investigator                      Date

APPENDIX:

A. More comprehensive/final project reports. If distributed previously, simply reference the document or report. None

Prepared and compiled by Bob D. Burdick, 01/12/03  
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